

In re Patent Application of
CROCE ET AL.
Serial No. **Not Yet Assigned**
Filed: **Herewith**

A5
25. The method of Claim 19 wherein the body region
has a dopant concentration of about 5×10^{17} to 5×10^{18} atoms cm^{-3} .

REMARKS

Attached hereto is a marked-up version of the
changes made to the specification by the current amendment.
The attached pages are captioned "**Version With Markings to**
Show Changes Made."

It is believed that all of the claims are patentable
over the prior art. For better readability and the Examiner's
convenience, the newly submitted claims differ from the
translated counterpart claims which are being canceled. The
newly submitted claims do not represent changes or amendments
that narrow the claim scope for any reason related to the
statutory requirements for patentability.

Accordingly, after the Examiner completes a thorough
examination and finds the claims patentable, a Notice of
Allowance is respectfully requested in due course. Should the
Examiner determine any minor informalities that need to be
addressed, he is encouraged to contact the undersigned
attorney at the telephone number below.

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Respectfully submitted,



CHRISTOPHER F. REGAN

Reg. No. 34,906

Allen, Dyer, Doppelt, Milbrath
& Gilchrist, P.A.

255 S. Orange Avenue, Suite 1401
Post Office Box 3791

Orlando, Florida 32802

407-841-2330

407-841-2343 fax

Attorneys for Applicants

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VERSION WITH MARKINGS TO SHOW CHANGES MADE

In the Specification:

Paragraph beginning at page 2, line 18 has been amended as follows:

A typical shape of the depletion regions of the two above noted junctions is illustrated in FIG. 1a where the source 14, the body region 13, and the gate are connected to a reference potential GND (i.e., $V_g=V_{sub}=V_s=0$) and a certain VDS voltage (e.g., $V_{DS}=20V$) is applied to the drain. Under these operating conditions, the junctions are inversely biased because of the applied VDS voltage, and the respective depletion regions extend into the drain well region down to a certain depth. By further incrementing the VDS voltage, as shown in FIG. 1b (e.g., $V_{DS}=25V$ where $V_g=V_{sub}=V_s=0$), the depletion regions of the junctions between the substrate and the drain well region 12 and between the drain well region and the body region 13 merge. This completely depletes the drain well region 12, thus producing the desired RESURF condition.

Paragraph beginning at page 4, line 16 has been amended as follows:

FIG. 2a is a cross-sectional view illustrating a traditional LDMOS structure according to the prior art; [and a]

FIG. 2b is a cross-sectional view illustrating an LDMOS structure of the invention;

Paragraph beginning at page 5, line 24 has been amended as follows:

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The principles upon which the RESURF LDMOS structure of the invention are based will be better understood with reference to FIGS. 3a and 3b. The BV measurements illustrated in FIG. 3a were obtained with $V_{ds}=70V$ and $V_g=V_s=V_{sub}=0V$, and the PT measurements illustrated in FIG. 3b were obtained with $V_{ds}=V_g=V_s=70V$ and $V_{sub}=0V$. As shown in FIG. 3b, even if relatively high voltages are applied to the drain and source (typical of a high-side application), the drain well region **12** will be completely depleted of its charge before the body buffer region **15** is depleted. This is due to the heavier doping of the body buffer region **15**. This substantially prevents the occurrence of PT phenomena at relatively low voltages, which in turn enhances the performance of the structure of the invention under critical conditions of use.